

WHAT IS CLAIMED IS:

1. A wiring having a layered structure including a first conductive layer with a first width as a first layer, a second conductive layer with a second width  
5 smaller than the first width as a second layer, and a third conductive layer with a third width smaller than the second width as a third layer,

wherein a cross-section of edges of the first conductive layer, the second conductive layer, or the third conductive layer has a taper shape.

10 2. A wiring according to claim 1, wherein the first conductive layer comprises at least one selected from the group consisting of W and Mo.

3. A wiring according to claim 1, wherein the second conductive layer comprises Al.  
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4. A wiring according to claim 1, wherein the third conductive layer comprises Ti.

5. A wiring according to claim 1, wherein the second conductive layer is  
20 covered with the first conductive layer, the third conductive layer, and an insulating film, and a region contacting the insulating film is oxidized.

6. A wiring according to claim 1, wherein the wiring is used for at least one selected from the group consisting of a liquid crystal display device and a  
25 light-emitting device.

7. A method of manufacturing a wiring comprising the steps of:  
forming a first-shaped conductive layer comprising a lamination of a first conductive layer, a second conductive layer, and a third conductive layer on an  
30 insulating surface;

etching the first conductive layer, the second conductive layer and the third conductive layer to form a second-shaped conductive layer comprising a lamination of the first conductive layer with a first width, a second conductive layer with a second width, and a third conductive layer with a third width; and

5 etching the second conductive layer with the second width and the third conductive layer with the third width to form a third-shaped conductive layer comprising a lamination of a first conductive layer with a fourth width, a second conductive layer with a fifth width, and a third conductive layer with sixth width,

wherein a cross-section of edges of the first conductive layer, the second  
10 conductive layer, or the third conductive layer has a taper shape.

8. A method of manufacturing a wiring comprising the steps of:

forming a first-shaped conductive layer comprising a lamination of a first  
conductive layer, a second conductive layer, and a third conductive layer on an  
15 insulating surface;

etching the second conductive layer and the third conductive layer to form a second-shaped conductive layer comprising a lamination of the first conductive layer, a second conductive layer with a first width, and a third conductive layer with a second width;

20 etching the first conductive layer to form a third-shaped conductive layer comprising a lamination of a first conductive layer with a third width, the second conductive layer with the first width, and the third conductive layer with the second width; and

etching the second conductive layer with the first width and the third  
25 conductive layer with the second width to form a fourth-shaped conductive layer comprising a lamination of a first conductive layer with a fourth width, a second conductive layer with a fifth width, and a third conductive layer with a sixth width,

wherein a cross-section of edges of the first conductive layer, the second conductive layer, or the third conductive layer has a taper shape.

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9. A method of manufacturing a wiring comprising the steps of:

forming a first-shaped conductive layer comprising a lamination of a first conductive layer, a second conductive layer, and a third conductive layer on an insulating surface;

5       etching the first conductive layer, the second conductive layer and the third conductive layer to form a second-shaped conductive layer comprising a lamination of the first conductive layer with a first width, a second conductive layer with a second width, and a third conductive layer with a third width;

      etching the second conductive layer with the second width and the third  
10   conductive layer with the third width to form a third-shaped conductive layer comprising a lamination of a first conductive layer with a fourth width, a second conductive layer with a fifth width, and a third conductive layer with sixth width;  
and

      subjecting the third-shaped conductive layer to a plasma treatment,

15       wherein a cross-section of edges of the first conductive layer, the second conductive layer, or the third conductive layer has a taper shape.

10. A method of manufacturing a wiring comprising the steps of:

      forming a first-shaped conductive layer comprising a lamination of a first  
20   conductive layer, a second conductive layer, and a third conductive layer on an insulating surface;

      etching the second conductive layer and the third conductive layer to form a  
second-shaped conductive layer comprising a lamination of the first conductive  
layer, a second conductive layer with a first width, and a third conductive layer with  
25   a second width;

      etching the first conductive layer to form a third-shaped conductive layer  
comprising a lamination of a first conductive layer with a third width, the second  
conductive layer with the first width, and the third conductive layer with the second  
width;

30       etching the second conductive layer with the first width and the third

conductive layer with the second width to form a fourth-shaped conductive layer comprising a lamination of a first conductive layer with a fourth width, a second conductive layer with a fifth width, and a third conductive layer with a sixth width; and

- 5       subjecting the fourth-shaped conductive layer to a plasma treatment,  
      wherein a cross-section of edges of the first conductive layer, the second conductive layer, or the third conductive layer has a taper shape.

11. A method of manufacturing a wiring according to any one of claims 7 to  
10   10 , wherein the first conductive layer comprises at least one selected from the group consisting of W and Mo.

12. A method of manufacturing a wiring according to any one of claims 7 to  
10, wherein the second conductive layer comprises Al.

15       13. A method of manufacturing a wiring according to any one of claims 7 to  
10, wherein the third conductive layer comprises Ti.

14. A method of manufacturing a wiring according to any one of claims 7 to  
20   10, wherein the plasma treatment is conducted by using oxygen or a gas mainly containing oxygen, or H<sub>2</sub>O.

15. A wiring board comprising an insulating substrate and wiring,  
      wherein the wiring has a layered structure including a first conductive layer  
25   with a first width as a first layer, a second conductive layer with a second width smaller than the first width as a second layer, and a third conductive layer with a third width smaller than the second width as a third layer,  
      wherein a cross-section of edges of the first conductive layer, the second conductive layer, or the third conductive layer has a taper shape.

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16. A wiring board according to claim 15, wherein the first conductive layer comprises at least one selected from the group consisting of W and Mo.

17. A wiring board according to claim 15, wherein the second conductive layer comprises Al.

18. A wiring board according to claim 15, wherein the third conductive layer comprises Ti.

19. A wiring board according to claim 15, wherein the second conductive layer is covered with the first conductive layer, the third conductive layer, and an insulating film, and a region contacting the insulating film is oxidized.

20. A wiring board according to claim 15, wherein a liquid crystal display device or a light-emitting device is manufactured by using the wiring board.

21. A method of manufacturing a wiring board comprising the steps of:  
forming a first-shaped conductive layer comprising a lamination of a first conductive layer, a second conductive layer, and a third conductive layer on an insulating surface;

etching the first conductive layer, the second conductive layer and the third conductive layer to form a second-shaped conductive layer comprising a lamination of a first conductive layer with a first width, a second conductive layer with a second width, and a third conductive layer with a third width; and

etching the second conductive layer with the second width and the third conductive layer with the third width to form a third-shaped conductive layer comprising a lamination of a first conductive layer with a fourth width, a second conductive layer with a fifth width, and a third conductive layer with the sixth width,

wherein a cross-section of edges of the first conductive layer with the fourth

width, the second conductive layer with the fifth width, or the third conductive layer with the sixth width has a taper shape.

22. A method of manufacturing a wiring board comprising the steps of:

5 forming a first-shaped conductive layer composed of a stack of a first conductive layer, a second conductive layer, and a third conductive layer on an insulating surface;

etching the second conductive layer and the third conductive layer to form a second-shaped conductive layer comprising a lamination of the first conductive layer, a second conductive layer with a first width, and a third conductive layer with a second width;

etching the first conductive layer to form a third-shaped conductive layer comprising a lamination of a first conductive layer with a third width, the second conductive layer with the first width, and the third conductive layer with the second width; and

etching the second conductive layer with the first width and the third conductive layer with the second width to form a fourth-shaped conductive layer comprising a lamination of a first conductive layer with a fourth width, a second conductive layer with a fifth width, and a third conductive layer with a sixth width,

20 wherein a cross-section of edges of the first conductive layer with the fourth width, the second conductive layer with the fifth width, or the third conductive layer with the sixth width has a taper shape.

23. A method of manufacturing a wiring board comprising the steps of:

25 forming a first conductive layer on an insulating surface;

forming a second conductive layer on the first conductive layer;

forming a third conductive layer on the second conductive layer;

etching the first to third conductive layers to form a conductive layer with a taper portion; and

30 subjecting the conductive layer with a taper portion to a plasma treatment.

24. A method of manufacturing a wiring board comprising the steps of:

forming a first-shaped conductive layer comprising a lamination of a first  
conductive layer, a second conductive layer, and a third conductive layer on an  
5 insulating surface;

etching the first conductive layer, the second conductive layer and the third  
conductive layer to form a second-shaped conductive layer comprising a lamination  
of a first conductive layer with a first width, a second conductive layer with a  
second width, and a third conductive layer with a third width;

10 etching the second conductive layer with the second width and the third  
conductive layer with the third width to form a third-shaped conductive layer  
comprising a lamination of a first conductive layer with a fourth width, a second  
conductive layer with a fifth width, and a third conductive layer with the sixth  
width; and

15 subjecting the third-shaped conductive layer to a plasma treatment,  
wherein a cross-section of edges of the first conductive layer with the fourth  
width, the second conductive layer with the fifth width, or the third conductive layer  
with the sixth width has a taper shape.

20 25. A method of manufacturing a wiring board comprising the steps of:

forming a first-shaped conductive layer composed of a stack of a first  
conductive layer, a second conductive layer, and a third conductive layer on an  
insulating surface;

etching the second conductive layer and the third conductive layer to form a  
25 second-shaped conductive layer comprising a lamination of the first conductive  
layer, a second conductive layer with a first width, and a third conductive layer with  
a second width;

etching the first conductive layer to form a third-shaped conductive layer  
comprising a lamination of a first conductive layer with a third width, the second  
30 conductive layer with the first width, and the third conductive layer with the second

width;

etching the second conductive layer with the first width and the third conductive layer with the second width to form a fourth-shaped conductive layer comprising a lamination of a first conductive layer with a fourth width, a second  
5 conductive layer with a fifth width, and a third conductive layer with a sixth width;  
and

subjecting the fourth-shaped conductive layer to a plasma treatment,

wherein a cross-section of edges of the first conductive layer with the fourth width, the second conductive layer with the fifth width, or the third conductive layer  
10 with the sixth width has a taper shape.

26. A method of manufacturing a wiring board according to any one of claims 21 to 25, wherein the first conductive layer comprises at least one selected from the group consisting of W and Mo.

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27. A method of manufacturing a wiring board according to any one of claims 21 to 25, wherein the second conductive layer comprises Al.

28. A method of manufacturing a wiring board according to any one of  
20 claims 21 to 25, wherein the third conductive layer comprises Ti.

29. A method of manufacturing a wiring board according to any one of claims 21 to 25, wherein the plasma treatment is conducted by using oxygen or a gas mainly containing oxygen, or H<sub>2</sub>O.

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30. A semiconductor device comprising:

a semiconductor layer over a substrate;

a gate insulating film on the semiconductor layer;

a wiring on the gate insulating layer, the wiring having a layered structure  
30 including a first conductive layer with a first width as a first layer, a second



conductive layer with a second width smaller than the first width as a second layer,  
and a third conductive layer with a third width smaller than the second width as a  
third layer,

wherein a cross-section of edges of the first conductive layer, the second  
5 conductive layer, or the third conductive layer has a taper shape.

31. A semiconductor device according to claim 30, wherein the first  
conductive layer comprises at least one selected from the group consisting of W and  
Mo.

32. A semiconductor device according to claim 30, wherein the second  
conductive layer comprises Al.

33. A semiconductor device according to claim 30, wherein the third  
15 conductive layer comprises Ti.

34. A semiconductor device according to claim 30, wherein the second  
conductive layer is covered with the first conductive layer, the third conductive  
layer, and an insulating film, and a region contacting the insulating film is oxidized.

35. A semiconductor device according to claim 30, wherein the  
semiconductor device is at least one selected from the group consisting of a liquid  
crystal display device and a light-emitting device.

36. A semiconductor device according to claim 30, wherein the  
semiconductor device is at least one selected from the group consisting of a  
personal computer, a player using a recording medium, and a display.

37. A method of manufacturing a semiconductor device comprising the  
30 steps of:

forming a semiconductor layer over a substrate;

forming a gate insulating film on the semiconductor layer;

forming a first-shaped conductive layer comprising a lamination of a first  
conductive layer, a second conductive layer, and a third conductive layer on the  
5 gate insulating film;

etching the first conductive layer, the second conductive layer and the third  
conductive layer to form a second-shaped conductive layer comprising a lamination  
of the first conductive layer with a first width, a second conductive layer with a  
second width, and a third conductive layer with a third width; and

10 etching the second conductive layer with the second width and the third  
conductive layer with the third width to form a third-shaped conductive layer  
comprising a lamination of a first conductive layer with a fourth width, a second  
conductive layer with a fifth width, and a third conductive layer with sixth width,

wherein a cross-section of edges of the first conductive layer, the second  
15 conductive layer, or the third conductive layer has a taper shape.

38. A method of manufacturing a semiconductor device comprising the  
steps of:

forming a semiconductor layer over a substrate;

20 forming a gate insulating film on the semiconductor layer;

forming a first-shaped conductive layer comprising a lamination of a first  
conductive layer, a second conductive layer, and a third conductive layer on the  
gate insulating film;

etching the second conductive layer and the third conductive layer to form a  
25 second-shaped conductive layer comprising a lamination of the first conductive  
layer, a second conductive layer with a first width, and a third conductive layer with  
a second width;

etching the first conductive layer to form a third-shaped conductive layer  
comprising a lamination of a first conductive layer with a third width, the second  
30 conductive layer with the first width, and the third conductive layer with the second

width; and

etching the second conductive layer with the first width and the third conductive layer with the second width to form a fourth-shaped conductive layer comprising a lamination of a first conductive layer with a fourth width, a second  
5 conductive layer with a fifth width, and a third conductive layer with a sixth width,  
wherein a cross-section of edges of the first conductive layer, the second conductive layer, or the third conductive layer has a taper shape.

39. A method of manufacturing a semiconductor device comprising the  
10 steps of:

forming a semiconductor layer over a substrate;

forming a gate insulating film on the semiconductor layer;

forming a first-shaped conductive layer comprising a lamination of a first  
conductive layer, a second conductive layer, and a third conductive layer on the  
15 gate insulating film;

etching the first conductive layer, the second conductive layer and the third  
conductive layer to form a second-shaped conductive layer comprising a lamination  
of the first conductive layer with a first width, a second conductive layer with a  
second width, and a third conductive layer with a third width;

20 etching the second conductive layer with the second width and the third  
conductive layer with the third width to form a third-shaped conductive layer  
comprising a lamination of a first conductive layer with a fourth width, a second  
conductive layer with a fifth width, and a third conductive layer with sixth width;  
and

25 subjecting the third-shaped conductive layer to a plasma treatment,  
wherein a cross-section of edges of the first conductive layer, the second  
conductive layer, or the third conductive layer has a taper shape.

40. A method of manufacturing a semiconductor device comprising the  
30 steps of:

forming a semiconductor layer over a substrate;

forming a gate insulating film on the semiconductor layer;

forming a first-shaped conductive layer comprising a lamination of a first  
conductive layer, a second conductive layer, and a third conductive layer on the  
5 gate insulating film;

etching the second conductive layer and the third conductive layer to form a  
second-shaped conductive layer comprising a lamination of the first conductive  
layer, a second conductive layer with a first width, and a third conductive layer with  
a second width;

10 etching the first conductive layer to form a third-shaped conductive layer  
comprising a lamination of a first conductive layer with a third width, the second  
conductive layer with the first width, and the third conductive layer with the second  
width;

etching the second conductive layer with the first width and the third  
15 conductive layer with the second width to form a fourth-shaped conductive layer  
comprising a lamination of a first conductive layer with a fourth width, a second  
conductive layer with a fifth width, and a third conductive layer with a sixth width;  
and

subjecting the fourth-shaped conductive layer to a plasma treatment,

20 wherein a cross-section of edges of the first conductive layer, the second  
conductive layer, or the third conductive layer has a taper shape.

41. A method of manufacturing a semiconductor device according to any  
one of claims 37 to 40, wherein the first conductive layer comprises at least one  
25 selected from the group consisting of W and Mo.

42. A method of manufacturing a semiconductor device according to any  
one of claims 37 to 40 , wherein the second conductive layer comprises Al.

30 43. A method of manufacturing a semiconductor device according to any

one of claims 37 to 40 , wherein the third conductive layer comprises Ti.

44. A method of manufacturing a semiconductor device according to any one of claims 37 to 40, wherein the plasma treatment is conducted by using oxygen  
5 or a gas mainly containing oxygen, or H<sub>2</sub>O.

45. A method of manufacturing a semiconductor device according to any one of claims 37 to 40, wherein the semiconductor device is at least one selected from the group consisting of a liquid crystal display device and a light-emitting  
10 device.

46. A method of manufacturing a semiconductor device according to any one of claims 37 to 40, wherein the semiconductor device is at least one selected from the group consisting of a personal computer, a player using a recording  
15 medium, and a display.